

Abstract Submitted
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Pulsed-power driven reconnection and the inverse skin effect¹

JOHN GREENLY, CHARLES SEYLER, XUAN ZHAO, Cornell University — The COBRA 1 MA generator at Cornell is used to drive magnetic reconnection experiments using wire plasmas. Typically two parallel wires are driven, accumulating magnetic and thermal energy during the current rise. This stored energy is converted into plasma flow kinetic energy by reconnection, driven by the “inverse skin effect” when the driving voltage reverses after peak current. The reversed voltage reverses the Poynting flux so that magnetic energy is being removed from the load, reducing the magnetic field at the boundary on a time scale short compared with resistive penetration time. Reversed current in the outer plasma drives reconnection of flux and creates supersonic and superalfvenic outflows. This effect may have relevance to other pulsed-power driven plasmas, such as the phenomenon of “trailing mass” in imploding Z-pinches. Recent measurements including first data from Thomson scattering will be presented.

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